

***This question paper contains 3 printed pages.***

**6136**

**Your Roll No.....**

**MCA / IV Sem.**

**J**

**Paper MCA - 403**

**PROGRAMMING PARADIGMS**

**(Admissions of 2006 & onwards)**

**Time 3 hours**

**Maximum Marks 60**

*(Write your Roll No on the top immediately  
on receipt of this question paper)*

***Attempt all questions***

***Parts of a question must be answered together.***

- 1 a) Illustrate the variety of bindings and binding times for the following statement  
 $X = X + 10$  06
- b) Discuss the main factors that make it difficult to determine the precise specification of an operation. 06
- c) What is strong typing? Explain 02
- 2 a) How are fixed point real numbers implemented in a language? Explain with suitable example 05
- b) Differentiate between translation and software interpretation with the help of suitable example 05
- c) Give the access formula for computing the location of component A [I, J] of a matrix A declared as  
 $A : \text{array} [LB_1 \dots UB_1, LB_2 \dots UB_2]$   
where A is stored in column major order 05

**PT.O**

- 3 a) Discuss the following method for transmitting parameter with the help of examples ·
- (i) Call-by-name
  - (ii) Call-by-value result. 05

b) Prolog rules can be viewed as logical predicates. The rule  $a :- b, c$  will cause  $a$  to succeed if  $b$  and  $c$  both succeed. So we can say  $a$  is true if  $b \wedge c$  is true. Under what conditions for  $p, q, r$  and  $s$  are the following Prolog rules satisfied ?

(i)  $X :- p, !, q$   
 $X :- r, s$

(ii)  $X :- p, q$   
 $X :- r, !, s$  04

c) Write a function Append in Prolog to append two given lists. 04

- 4 a) Show the structure of activation record for the given subprogram ·

```
float FUNC (int X, float Y)
{
    const z = 10,
    # define maxval = 20,
    int k; char A [5] ,
    k = max val;
    if (N > Z)
        return (2 * z + k);
}
```

05

b) Discuss the advantages and disadvantages of dynamic type checking over static type checking. 05

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- c) Write an iterative function in LISP named sum-all ( ) using do that takes an integer n as argument and returns sum of integers from 1 to n. For example (sum-all 5) should return 15. 04
- d) What are the optional parameters in LISP ? Explain with suitable example. 04

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